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Author(s): Wolke, D. Schreier, A. Zanarini, M. Winsper, C.

Article Title: Bullied by Peers in Childhood and Borderline Personality Symptoms at 11 years of age: A Prospective Study.

Year of publication: Forthcoming

Link to published article:

<http://www.blackwellpublishing.com/journal.asp?ref=0021-9630>

Publisher statement: 'The definitive version is available at www.blackwell-synergy.com'

Bullied by Peers in Childhood and Borderline Personality Symptoms at 11 Years of Age: A

Prospective Study

Dieter Wolke¹

Andrea Schreier^{1,2}

Mary C. Zanarini³

Catherine Winsper¹

¹ Department of Psychology, University of Warwick, Coventry (UK)

² Department of Education and Rehabilitation, Ludwig Maximilian University, Munich (D)

³ McLean Hospital, Harvard Medical School, Belmont, MA (USA)

Word count: 7569

Running head: Peer victimisation and Borderline Personality Disorder symptoms

Declaration of Interest: None

ABSTRACT

Background: Abuse by adults has been reported as a potent predictor of Borderline Personality Disorder (BPD). Unclear is whether victimisation by peers increases the risk of borderline personality symptoms.

Method: The Avon Longitudinal Study of Parents and Children (ALSPAC) prospective, longitudinal observation study of 6050 mothers and their children. Child bullying was measured by self-report and mother and teacher report between 4 and 10 years. Family adversity was assessed from pregnancy to 4 years; parenting behaviours from 2 to 7 years, sexual abuse from 1.5 to 9 years, and IQ and DSM-IV axis I diagnoses at 7 to 8 years. Trained psychologists interviewed children at 11.8 years to ascertain DSM-IV borderline personality disorder symptoms (5 or more).

Results: Accounting for known confounders, victims of peer bullying had an increased risk of BPD symptoms according to self-report (OR, 2.82; 95% CI, 2.13-3.72); mother report (OR, 2.43; 95% CI, 1.86-3.16); and teacher report (OR, 1.95; 95% CI, 1.34-2.83). Children who reported being chronically bullied (OR, 5.44; 95% CI, 3.86 - 7.66) or experienced combined relational and overt victimisation (OR, 7.10; 95% CI, 4.79-10.51) had highly increased odds of developing BPD symptoms. Children exposed to chronic victimisation according to mother report were also at heightened risk of developing BPD symptoms (OR, 3.24; 95% CI, 2.24 - 4.68).

Conclusions: Intentional harm inflicted by peers is a precursor or marker on the trajectory towards the development of BPD symptoms in childhood. Clinicians should be adequately trained to deal with, and ask users of mental health services routinely about, adverse experiences with peers.

Keywords: ALSPAC, bullying, borderline personality disorder, victimisation, peer relationships

INTRODUCTION

Borderline Personality Disorder (BPD) is a serious and persistent mental illness (Lieb, Zanarini, Schmahl, Linehan, & Bohus, 2004), affecting between 0.7 and 5.9% of the adult population (Lenzenweger, Lane, Loranger, & Kessler, 2007). It is characterised by persistent instability in affect regulation, impulse control, interpersonal relationships, and self-image (Lieb et al., 2004). Adverse childhood experiences in combination with biological vulnerability and heightened emotional dysregulation are thought to be pertinent in the aetiology of BPD (Crowell, Beauchaine, & Linehan, 2009). Specifically, physical and sexual abuse and neglect (Schmahl, Vermetten, Elzinga, & Bremner, 2004); parental hostility and resentment (Johnson, Cohen, Chen, Kasen, & Brook, 2006) and exposure to domestic violence (Herman, Perry, & van der Kolk, 1989) have been identified as precursors to BPD.

Peer victimisation (bullying) in childhood is a form of systematic abuse of power, and links with suicide ideation (Kaminski & Fang, 2009); psychotic symptoms (Schreier, Wolke, Thomas, Horwood, & Gunnell, 2009); and neurobiological changes in the brain (Teicher, Samson, Sheu, Polcari, & McGreenery, 2010) have been reported. It is therefore surprising that it has not been investigated in relation to BPD, which encompasses cognitive, emotional, behavioural, and relational symptoms.

There are various mechanisms via which peer victimisation could lead to BPD symptoms. Firstly, physiological responses to peer-related trauma may lead to altered stress responses (Ouellet-Morin et al., 2011) and exacerbate regulatory problems (Rudolph, Troop-Gordon, & Flynn, 2009), manifesting as the core impulsive and affective instability symptoms of BPD. Secondly, negative peer interactions could impact upon the relational schemata of the child

(Salmivalli & Isaacs, 2005), leading to BPD-typical responses, as observed in the relationship difficulties associated with this disorder. Finally, genetic vulnerability related to emotional regulation (Crowell, Beauchaine, & Linehan, 2009) may moderate the impact of exposure to peer victimisation on BPD symptoms, as has been previously demonstrated in relation to depression symptoms (Sugden et al., 2010).

Large prospective, longitudinal studies pertaining to the developmental precursors of BPD are now necessary to advance aetiological knowledge (Crick, Murray-Close, & Woods, 2005). Indeed, BPD symptoms are unlikely to suddenly appear in adulthood; but may be identified in childhood or adolescence as potential precursors, i.e. a BPD phenotype, on the pathway towards BPD (Reich & Zanarini, 2001; Zanarini et al., 2011).

The current study investigated whether exposure to peer victimisation, in the form of bullying during elementary school, was predictive of clinically relevant (5 or more) BPD symptoms in late childhood. This threshold was chosen, as we were interested in identifying children evincing a BPD phenotype, consistent with BPD diagnosis according to the Diagnostic Statistical Manual. A well tested clinical interview was adapted for the UK, facilitating comparison with adult studies (Zanarini et al., 2011), and the only extant community-based study of prevalence in children and adolescents (Bernstein et al., 1993). Further, we investigated whether there was a dose-response relationship between combined overt and relational or chronic victimisation, and the risk of BPD symptoms. Confounders were incorporated into the analysis according to reported prospective associations with personality disorders, including: IQ (Belsky et al., in press; Moran, Klinteberg, Batty, & Vagero, 2009); Axis I disorders (Kasen, Cohen, Skodol, Johnson, & Brook, 1999); maladaptive parenting (Johnson et al., 2006); and sexual abuse (Johnson, Cohen, Brown, Smailes, & Bernstein, 1999)

METHODS

Participants

The Avon Longitudinal Study of Parents and Children (ALSPAC) comprises children from the South West of England who had an expected delivery date between April 1, 1991 and December 31, 1992. The children are considered broadly representative of children in the United Kingdom (Golding, Pembrey, Jones, & Team, 2001). Starting from the first trimester of pregnancy, parents completed regular postal questionnaires regarding family circumstances and the study child's health and development from birth onwards. The study children attended annual face-to-face assessments from 7.5 years of age. This study is based on 6050 children who took part in the Childhood Interview for DSM-IV Borderline Personality Disorder: UK Version (CI-BPD-UK) (Zanarini, Horwood, Waylen, & Wolke, 2004) at 11.8 years of age.

Differences between participants with and without the completed borderline interview

Sample characteristics are shown in Supplementary Table 1. Those lost to follow up were more often boys, minority children, of low birth weight, born to single mothers of lower education level living in rented properties with parents engaged in manual jobs. They were more likely to be born into family adversity, and to have had a psychiatric diagnosis at 7.5 years and a lower IQ at 8 years. Frequency of sexual abuse did not differ between those with or without BPD interviews. Those retained in the study experienced higher mean levels of maternal hitting and hostility.

Ethical approval

Ethical approval for the study was obtained from the ALSPAC Law and Ethics, and the Local

Research Ethics, Committees. Informed consent was obtained from the parents of the children, following an explanation of the nature of the study.

Measures

Borderline Personality Disorder Features Interview

Borderline Features were assessed using a semi - structured interview: the *Childhood Interview for DSM-IV Borderline Personality Disorder: UK Version (CI-BPD-UK)*; based on the borderline module of the Diagnostic Interview for DSM-IV Personality Disorders (DIPD-IV) (Zanarini, Frakenburg, Sickel, & Yong, 1996). The inter-rater reliability (Kappa) of the UK-CI-BPD, assessed from taped interviews of 30 children, ranged from 0.36 to 1.0 (median value 0.88), with 86% of the kappa values in the excellent range (> 0.75) (Zanarini et al., 2011). The interview, carried out by trained psychologists, consisted of nine sections: intense inappropriate anger, affective instability, emptiness, identity disturbance, paranoid ideation/dissociation, frantic efforts to avoid abandonment, suicidal or self-mutilating behaviours, general impulsivity, and intense unstable relationships. A judgment was made as to whether each symptom was definitely present, probably present or absent. A symptom was classed as definitely present if it occurred daily or approximately 25 % of the time (Zanarini et al., 2011); and probable if it had occurred repeatedly but did not meet criterion for definitely present.

Peer victimisation

Peer victimisation was assessed via child report, at 8 and 10 years of age, with the Bullying and Friendship Interview Schedule (Hamburger, Basile, & Vivola, 2011; Wolke, Woods, Bloomfield, & Karstadt, 2000). Trained psychology graduates asked children about victimisation by peers during the previous six months. Five items pertained to overt and four to relational, victimisation

(see **Table 1**). Children could answer Never (score: 0) or yes they had experienced bullying. If children answered yes to either form of bullying, they were asked how frequently it had occurred. Respondents could choose from: *infrequently* (score 1): 1 to 3 times in past 6 months; *frequently* (score 2): more than 4 times in the past 6 months, but less than once a week; and *very frequently* (score 3): at least once per week. Overt and relational victims were defined as those experiencing victimisation frequently or very frequently. The following categorical child report victimisation variables were derived:

1) **Any peer victimisation** (overt and/or relational at 8 and/or 10 years of age).

2) **Chronicity of victimisation:** unstable (reported at one time point); stable (reported at both time points) and never victimised (no report of victimisation).

3) **Combined victimisation (i.e. relational and overt victimisation) at 10 years:** both (victim of relational and overt bullying); victim of relational bullying only; victim of overt bullying only; or never victimised. Children receiving both overt and relational victimisation have been previously reported to be more severely affected and to experience more behavioural, emotional or psychotic symptoms (Schreier et al., 2009; Wolke & Samara, 2004).

Additionally, Indices of **Severity of overt, relational and combined victimisation** (number of items and frequency) at 8 and 10 years were computed by totaling item scores: Relational (4 items, each scaled 0 to 3) and overt (5 items, each scaled of 0 to 3) items (see Table 1) were summed to indicate increasing severity of overt and relational victimisation at 8 and 10 years. Thus, overt severity scores could range from 0 to 15 and relational from 0 to 12. A combined victimisation score was derived by totaling the overt and relational scores across time points (8

and 10 years). The resulting score was divided by four (2 time points, two scales at each time point) for ease of interpretation of effect sizes (i.e. same scaling as individual scales).

Table 1

A single item included in the Strengths and Difficulties Questionnaire (Goodman, 1997):

“Picked on or bullied by other children in the past 6 months” was used to assess peer victimisation according to parent and teacher report. This was rated on a scale from “not true” “somewhat true” to “certainly true” If the response was somewhat or certainly true, at any assessment point (parent: 4, 6.8 and 9 years; teacher: 7 and 10 years), the child was considered a parent or teacher reported victim of bullying, respectively (Schreier et al., 2009).

A chronicity variable was also constructed for mother (none; unstable = 1 time point; stable = 2 or 3 time points) and teacher (none; unstable = 1 time point; stable = 2 time points) report.

Potential confounders

Sexual abuse was assessed using one item included in the *upsetting events questionnaire* completed by the mother (“He/she was sexually abused”) when the study child was 1.5, 2.5, 3.5, 4.8, 5.8, 6.8 and 8.6 years old. If any sexual abuse occurred across the 7 time points it was scored as present.

Maladaptive parenting was assessed using indicators of maternal hitting (2, 3.5 & 6.4 years) and hostility (2, 4 & 7 years) according to parental report. Hitting was coded at 2 and 3.5 years on a scale of 1-4 and at 6.4 years on a scale of 1-2, with higher scores representing increasing frequency of hitting. An overall hitting variable was constructed by summing these 3 scales to produce a score from 0 to 10. Hostility was indicated by 4 items, e.g. *mum feels that whining makes her want to hit child* (Waylen, Stallard, & Stewart-Brown, 2008) at 2 and 4 years

and 3 items at 7 years. These items were summed to give a total maternal hostility score from 0 to 7.

Multiple family risk factors during pregnancy (long index); birth to 2 years (long index); and 2 to 4 years (short index), were assessed using the Family Adversity Index (FAI) (Bowen, Heron, Waylen, Wolke, & Team, 2005). The FAI long version consists of 18 items e.g. financial difficulties, maternal affective disorder; and the short index has 15 of the same items, with the following 3 items not incorporated: social, practical and financial support. If an adversity item was reported, it was recorded as 1 point, and the points were then summed to derive a total FAI index score for each time point. The three FAI indexes were summed and entered into the analysis as a continuous variable, in accordance with suggested use (Bowen et al., 2005).

An abbreviated form of the Wechsler Intelligence Scale for Children (WISC) -III (UK version) was administered during the assessment clinic (8 years) deriving an overall intelligence quotient (IQ) (Wechsler, Golombok, & Rust, 1992). DSM-IV psychiatric diagnoses according to parent and teacher reports were made at 7.5 years, using the Developmental and Wellbeing Assessment (DAWBA). The diagnoses were made using a DSM-IV-TR algorithm, and reviewed by two experienced child psychiatrists (Robert Goodman, Tamsin Ford). The DAWBA has been validated for axis I diagnoses and shown to have utility as a clinical assessment tool (Goodman, Ford, Richards, Gatward, & Meltzer, 2000) (for further information see [http:// www.dawba.com/](http://www.dawba.com/)). The presence of any Axis I diagnosis of attention deficit-hyperactivity disorder, conduct disorder, oppositional defiant disorder, depression or anxiety versus no diagnosis was recorded.

Statistical analyses

All analyses were carried out using Stata version 10.0 (StataCorp, 2007). Logistic regression models were used to estimate odds ratios (OR) with 95% confidence intervals (CI). The outcome variable was borderline personality disorder (BPD) symptoms, which was based on the presence of 5 probable or definite symptoms (for more details see Zanarini et al., 2011). Gender differences were assessed for BPD symptoms and peer victimisation variables (Table 2). Crude associations between peer victimisation and presence of BPD symptoms were computed. The experience of being a victim of any type (child, parent and teacher report); chronicity (child, parent and teacher report); severity (totaling item scores); and combined (relational and overt) victimisation (child report at 10 years) were the independent variables (Table 3). The analyses were repeated controlling for potential confounders in multiple logistic regression analyses, using the forced entry method, i.e. all variables were entered together (Table 4). Model A is based on the full dataset of children who completed the BPD interview, adjusted for gender, and age at BPD assessment. Model B also controlled for gender and age only; but was conducted with the reduced data set, including only participants with information on all confounders used in model C. The analyses for model C were based on the reduced dataset, controlled for age, gender, and additionally FAI, DSM-IV diagnoses, sexual abuse, maternal hitting and hostility and child IQ.

RESULTS

Frequency of BPD and peer victimisation

Overall, 7.3% of the sample had 5 or more probable/definite BPD symptoms, and the prevalence according to gender was remarkably similar (female 7.4%; male 7.3%). Prevalence rates for any peer victimisation at any time point were as follows: child report: 46.2%, mother report: 37.0%

and teacher report: 14.1%. At one time point (e.g. at 10 years reported by children, table 2) any victimization was 23.9%. This one time point prevalence is fairly similar to reported prevalence rates ranging from 15% to 30% (Analitis et al., 2009; Stassen Berger, 2007); and the relative prevalence according to informant is congruent with previous reports, suggesting that victimisation is not always recognised by teachers (Ronning et al., 2009). Any, overt or chronic peer victimisation was more frequent in boys than girls independent of informant (child, mother or teacher). In contrast, relational victimisation was more frequent in girls (Table 2).

Table 2

Crude associations between peer victimisation and BPD symptoms

Victimisation (child, parent and teacher report) was a significant predictor of BPD symptoms (Table 3). Significant crude associations included: child report (Odds Ratio: 3.14; 95% Confidence Intervals: 2.51 - 3.92); mother report (2.48; 2.03 - 3.04); and teacher report (2.05; 1.55 - 2.70). According to child report, both chronic (6.28; 4.67 - 8.43) and combined victimisation (7.19; 5.28 - 9.80) evinced especially strong associations with BPD symptoms compared to those not exposed. Further, those exposed to chronic victimisation were (2.65; 2.03 - 3.46) times more likely to evince BPD symptoms than those exposed to unstable victimisation; and those exposed to both types of victimisation were (2.41; 1.71 - 3.38) times more likely than those exposed to overt, and (6.26; 2.91 - 13.41) times more likely than those exposed to relational victimisation, to evince BPD symptoms (Table 3). Similarly, chronic exposure according to mother report was more strongly associated with BPD symptoms than intermittent (1.73; 1.22 - 2.44) and no exposure (3.14; 2.31-4.27). Chronic exposure according to teacher report was more strongly associated with BPD symptoms than no exposure (3.68; 1.93 - 7.01). Severity of exposure to relational victimisation at 8 (1.23; 1.17 to 1.29) and 10 (1.37; 1.30 to

1.45) years; and overt victimisation at 8 (1.23; 1.17 to 1.29) and 10 years (1.35; 1.30 to 1.41), was predictive of BPD symptoms. Severity of combined, chronic victimisation was especially predictive of BPD symptoms (Supplementary Table 2). Every point increase on the continuous scale Severity of combined, chronic victimization was associated with 1.57 increased odds of BPD symptoms (1.57; 1.48 to 1.66).

Table 3

Associations between peer victimisation and BPD symptoms controlling for possible confounders

Peer victimisation according to child report at age 8 or 10 years and BPD symptoms were associated with the following possible confounders: FAI, DSM-IV diagnoses (DAWBA), IQ, maternal hitting and hostility (Supplementary Table 3) and gender (Table 2). Sexual abuse evinced a tendency towards increased BPD symptoms, but the association was not significant (Supplementary Table 3). When controlling for age and gender, associations were very similar in the full (model A) and reduced (model B: only cases with information on all potential confounders) data sets (Table 4). Incorporating all known confounders into the analysis (Model C) led to minor changes in the observed associations, with the exception of teacher reported chronic victimisation, which was no longer predictive of BPD symptoms (OR; 95% CI: 1.97; 0.67 - 5.82). Any victimisation: child: 2.82 (2.13 - 3.72); mother: 2.43 (1.86 - 3.16) and teacher: 1.95 (1.34 - 2.83); child reported chronic victimisation: 5.54 (3.86 - 7.66); mother reported chronic victimisation: 3.24 (2.24 - 4.68); combined victimisation: 7.10 (4.79 - 10.51), and severity of combined, chronic victimisation: 1.59 (1.47 to 1.71) all remained little changed with the addition of confounding variables.

Table 4

DISCUSSION

To our knowledge, this is the first study to explore the prospective association between peer victimisation and BPD symptoms. Any peer victimisation in primary school was a predictor of BPD symptoms at age 11.8 years. In particular, children who were exposed to combined (overt and relational) or chronic, victimisation (at 8 and 10 years) were at *highly* increased risk of developing BPD symptoms, indicating a dose-response relationship.

The results were unaltered if victimisation was considered as continuous scales of victimisation. Both overt and relational victimization predict BPD symptoms. We found comparable associations using mother and teacher report; therefore, the observed relationships between victimisation and BPD cannot be attributed solely to self-report bias, i.e. the tendency of individuals with BPD to misinterpret or misreport (Bailey & Shriver, 1999) peer victimisation experiences. Furthermore, the addition of all possible confounders into the model, led to negligible changes in the strength of associations. This supports that the observed associations were not due to confounding effects of the examined variables, and is suggestive of a causal relationship between peer victimisation and BPD symptoms. This interpretation is congruent with recent prospective studies revealing links between exposure to bullying and the development of psychopathology, including: internalising problems and psychotic symptoms (Arseneault et al., 2011; Arseneault et al., 2008).

A substantial dose-response relationship was found for combined victimisation, increasing severity and chronicity of exposure. According to child report, those who experienced both relational and overt peer victimisation had 7 times increased odds of BPD symptoms compared to those not exposed. Similarly, children who were victims of bullying at 8 and 10 years had 5.5 times increased odds of BPD symptoms compared to those never victimised. This pattern was also observed for mother reported chronic victimisation, though to a lesser extent of approximately 3.5 times increased odds of BPD symptoms. In terms of effect size, the reported odds ratios pertaining to chronicity, according to both child and mother report, may be interpreted as moderate to strong (Ferguson, 2009).

Although an increased dose-response relationship, in terms of frequency (Lataster et al., 2006); chronicity and combined victimisation, i.e. overt and relational victimisation (Schreier et al., 2009), has been reported previously for psychotic symptoms; the associations here are especially strong, and a pattern of increasing association dependent on chronicity, was observed according to both child and mother report. In contrast, the same dose-response relationship was not found for teacher reports.

Why does chronic, severe or combined victimisation have an especially strong impact on BPD symptoms? BPD is characterised by unstable and intense relationships, affective dysregulation, and a broad incapacity to trust the actions and motives of others (Crowell, Beauchaine, & Linehan, 2009). Research indicates that peer victimisation may work itself “under the skin” of victims, both psychologically and physiologically.

Psychologically, victimisation may impact upon schemata or internal working models pertaining to relationships, disrupting the individual’s ability to appropriately trust and interact

with others; leading to unstable relationships, biased perceptions, and emotional dysregulation (Staebler et al., 2011). Feeling betrayed by peers, loneliness, anger, and loss of trust are experiences consistently described by victims of bullying (Stassen Berger, 2007); and have recently been observed in adolescents with BPD symptoms (Sharp et al., 2011). Further, individuals with BPD struggle to trust, or “maintain co-operation” with, others during experimental social trust games; and work from pathological norms or models when planning strategies (King-Casas et al., 2008).

Physiologically, victimisation is a trauma which works itself “under the skin” by altering stress response (Ouellet-Morin et al., 2011) and impacting upon brain structures involved in the processing of social information (Teicher et al., 2010a), such as the anterior insula involved in monitoring bodily sensations to physical and social stimuli (Teicher et al., 2010b). Subsequently, individuals with BPD may not experience a “gut feeling” in response to socially inappropriate behavior, indicating that a relationship is in jeopardy (King-Casas et al., 2008); being unaware they do not initiate actions in order to maintain, or repair, relationships in trouble (Meyer-Lindenberg, 2008). Therefore, it is not surprising that the strongest effects of victimisation have been observed for symptom complexes with psychotic (Arseneault et al., 2011; Schreier et al., 2009) or BPD constellations, where social dysfunction plays an important role (Meyer-Lindenberg, 2008).

Alternatively, victims differ from children not involved in bullying in aspects other than those examined. They are often withdrawn, unassertive, physically weak, easily emotionally upset, angry, have poor social understanding, no or few friends, and are often bullied by their siblings (Monks et al., 2009). All of these features potentially make these individuals more likely targets of peers (Sapouna et al., 2011). Viewed from this perspective, victimisation may be a

marker within a developmental 'risk factor' model of BPD, rather than a cause (Miller, Muehlenkamp, & Jacobson, 2008); possibly resulting from adverse family relationships (Barker et al., 2008) or genetic origins (Ball et al., 2008).

This study has a number of strengths. A longitudinal, prospective design was utilised with bullying assessments available during childhood and BPD symptoms at 11.8 years. Direct and detailed assessments of peer victimisation and BPD symptoms in childhood were used, and there were multiple informants of peer victimisation. Further, the BPD interview is well validated with high inter-rater reliability. Prevalence rates in this study are similar to those reported in other studies in the UK, and children were drawn from the general population; therefore, confounding effects of treatment seeking can be ruled out. Finally, information was available on a variety of possible confounding factors.

With respect to the limitations, although BPD symptoms were assessed approximately two to up to six years after the bullying assessment, it is not known at what age BPD symptoms were first manifest, and there is no measure of BPD symptoms prior to the bullying assessment. Thus, it cannot be ruled out that BPD symptoms might have been present before exposure to peer victimisation, or that emotional instability or irritability may be potential precursors of both victimisation and BPD symptoms (Crowell, Beauchaine & Linehan, 2009). However, the relationship between victimisation and BPD symptoms was not affected by general mental health problems assessed at age 7. Furthermore, BPD symptoms were based on interviews with the children, and strongest relationships with victimisation, were found according to child reports. Although, these were replicated with mother and teacher reports, relationships may be inflated due to use of the same informant for predictor and outcome.

The BPD interview was conducted on just less than half the total cohort. However, peer victimisation itself, was not related to selective dropout. Under these circumstances the relationship between predictors and BPD symptoms is unlikely to be substantially altered by selective dropout processes as shown in simulations (Wolke et al., 2009), but it cannot be ruled out.

Finally, concern has been expressed regarding whether BPD symptoms can, or should, be diagnosed in adolescence (Goodman & Siever, 2011). The alternative would have been the use of a dimensional scale of BPD symptoms (Belsky et al., in press; Crick, Murray, Close, & Woods, 2005). However, there is growing evidence for the existence of adolescent-onset BPD; and recognition of its negative consequences for facets of adult functioning (Chen et al., 2006), and subsequently, the need for early treatment (Chanen et al., 2008).

A major implication of our findings is that chronic, combined relational and overt or severe peer victimisation has non-trivial adverse long-term consequences, particularly for the development of BPD symptoms in a non-clinical population. Reducing peer victimisation, and the resulting stress caused to victims (Farrington & Ttofi, 2009), should be a target for prevention and intervention in child and adolescent services. Clinicians should be aware of the importance of adverse interpersonal experiences with peers in respect to BPD; and be adequately trained to deal with, and routinely ask users of mental health services about, such experiences.

Correspondence: Prof. Dieter Wolke, Department of Psychology, University of Warwick, Coventry, CV4 7AL, UK, Phone: + 44 24 7652 3537, Fax: + 44 24 7652 4225, e-mail: D.Wolke@warwick.ac.uk

Acknowledgements

The UK Medical Research Council (Grant Ref: 74882), the Wellcome Trust (Grant Ref: 076467) and the University of Bristol provide core support for ALSPAC. Catherine Winsper was supported by a competitive Ph.D. scholarship funded by the University of Warwick, Department of Psychology.

We are extremely grateful to all the families who took part in this study, the midwives for their help in recruiting them, and the whole ALSPAC team, which includes interviewers, computer and laboratory technicians, clerical workers, research scientists, volunteers, managers, receptionists and nurses. Special thanks to Andrea Waylen and Jeremy Horwood for their help with the implementation of the study.

Key points

- Bullying victimisation has been previously reported as a risk factor for emotional and behavioural problems in children and adolescents
- This study adds that intentional harm doing by peers (bullying victimisation) in childhood, in particular, if it is both overt and relational or chronic, highly increases the risk of borderline personality disorder (BPD) symptoms in early adolescence; even after controlling for other adversities, maladaptive parenting or pre-existing axis-I disorders
- BPD is characterised by unstable and intense relationships, affective dysregulation, and a broad incapacity to trust appropriately the actions and motives of others. Clinicians should routinely consider peer problems as a factor in adolescents presenting with BPD symptoms.

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Table 1. Peer Victimisation variables according to child report at 8 and 10 years of age

Victimisation items	Derived victimisation variables			
	Any peer victimisation (8 and/or 10 years)	Severity (8 & 10 years) (continuous scale)	Chronicity (8 & 10 years)	Combined victimisation (10 years)
Overt victimisation				
1. Having belongings stolen				
2. Having been threatened or blackmailed				
3. Having been hit or beaten up	0 None	Overt severity Sum of 5 items	0 None	0 None
4. Having been called nasty names	1 Overt and/or relational ^a	Relational severity Sum of 4 items	1 Unstable ^b	1 Overt only ^d
5. Having nasty tricks played on them		Combined/chronic severity Sum of overt severity at 8&10 years and relational severity at 8 & 10 years divided by 4	2 Stable ^c	2 Relational only ^e
Relational victimisation				3 Both ^f
6. Other children not wanting to play with them				
7. Trying to get them to do something they didn't want to				
8. Spreading lies, rumours about child				
9. Spoiling games to upset child				

*All items on scale 0-3: 1: infrequently, 2: frequently, 3: very frequently

Table 2. Frequency of BPD and peer victimisation variables by total and gender

	Total N (%)	Females N (%)	Males N (%)	Females vs. Males OR (95% CI)
BPD				
No	5606 (92.7)	2882 (92.6)	2724 (92.7)	
Yes	444 (7.3)	230 (7.4)	214 (7.3)	1.02 (0.83-1.24)
Peer victimisation				
<u>Any victim by informant</u>				
Child ^b				
No	3117 (53.8)	1705 (57.1)	1412 (50.4)	1 [Reference]
Yes	2674 (46.2)	1282 (42.9)	1392 (49.6)	0.76 (0.68-0.84)
Mother				
No	3682 (63.0)	1987 (66.0)	1695 (59.8)	1 [Reference]
Yes	2167 (37.1)	1025 (34.0)	1142 (40.3)	0.77 (0.68-0.85)
Teacher				
No	3814 (85.9)	2062 (90.0)	1752 (81.5)	1 [Reference]
Yes	626 (14.1)	229 (10.0)	397 (18.5)	0.49 (0.41-0.58)
<u>Chronicity of peer victimisation^b</u>				
None	2457 (50.8)	1356 (54.0)	1101 (47.4)	1 [Reference]
Unstable ^c	1720 (35.6)	857 (34.1)	863 (37.1)	0.81 (0.71-0.91)
Stable ^d	660 (13.6)	300 (11.9)	360 (15.5)	0.68 (0.56-0.80)
<u>Combined victimisation^e</u>				
None	4117 (76.1)	2205 (78.8)	1912 (73.2)	1 [Reference]
Overt only	874 (16.2)	361 (12.9)	513 (19.6)	0.61 (0.52-0.71)
Relational only	151 (2.8)	98 (3.5)	53 (2.0)	1.60 (1.14-2.26)
Overt and relational	270 (5.0)	135 (4.8)	135 (5.2)	0.87 (0.67-1.11)

Abbreviations: N=number; OR=odds ratio; CI=confidence intervals; BPD=borderline personality disorder; ^a Boldface type indicates that the 95% CI does not include 1.00; ^b According to child report at 8 and 10 years; ^c Any victimisation (overt or relational) at either 8 or 10 years; ^d victimisation at both 8 and 10 years; ^e at age 10 years.

Table 3. Crude associations between peer victimisation and BPD status

Peer victimisation status	Probable/definite BPD status	
	N (%)	OR (95% CI) ^b
Any victim by informant		
<u>Child</u>		
No	118 (3.8)	[reference] ^a
Yes	294 (11.0)	3.14 (2.51 to 3.92)
<u>Mother</u>		
No	179 (4.9)	[reference]
Yes	244 (11.3)	2.48 (2.03 to 3.04)
<u>Teacher</u>		
No	238 (6.2)	[reference]
Yes	75 (12.0)	2.05 (1.55 to 2.70)
Chronicity of peer victimisation		
<u>Child</u>		
No	84 (3.4)	[reference] ^c
Unstable vs. none	133 (7.7)	2.37 (1.78 to 3.14)
Stable vs. none	120 (18.2)	6.28 (4.67 to 8.43)
Stable vs. unstable		2.65 (2.03 to 3.46)
<u>Mother</u>		
No	143 (5.0)	[reference]
Unstable vs. none	79 (8.7)	1.82 (1.37 to 2.42)
Stable vs. none	68 (14.1)	3.14 (2.31 to 4.27)
Stable vs. unstable		1.73 (1.22 to 2.44)
<u>Teacher</u>		
No	238 (6.2)	[reference]
Unstable vs. none	63 (11.2)	1.89(1.41 to 2.53)
Stable vs. none	12 (19.7)	3.68 (1.93 to 7.01)
Stable vs. unstable		1.95 (0.99 to 3.87)
Combined victimisation		
None	191 (4.6)	[reference] ^c
Overt vs. none	111 (12.7)	2.99 (2.33 to 3.83)
Relational vs. none	8 (5.3)	1.15 (0.55 to 2.38)
Both vs. none	70 (25.9)	7.19 (5.28 to 9.80)
Relational vs. overt		0.38 (0.18 to 0.80)
Both vs. overt		2.41 (1.71 to 3.38)
Both vs. relational		6.26 (2.91 to 13.41)

N = Number; OR = Odds Ratio; CI = Confidence Intervals; BPD = Borderline Personality Disorder

^a Reference group in all analyses consists of probands without BPD diagnosis; ^b Bold indicates that the 95% CI does not include 1.00; ^c Reference group for all comparisons labelled vs. none; reference groups for all other comparisons as indicated

Table 4. Associations between peer victimisation and BPD controlling for potentially confounding factors

	Model A OR (95% CI)	Model B OR (95% CI)	Model C OR (95% CI)
Peer victimisation status ^a			
Any victim by informant			
Child (N_A = 5791 N_{B/C}=4161)			
Yes vs. No	3.16 (2.54-3.94)	3.12 (2.37-4.10)	2.82 (2.13-3.72)
Mother (N_A = 5849 N_{B/C}=4161)			
Yes vs. No	2.50 (2.04-3.05)	2.82 (2.18-3.63)	2.43 (1.86-3.16)
Teacher (N_A = 4440 N_{B/C}=3073)			
Yes vs. No	2.09 (1.58-2.76)	2.25 (1.56-3.24)	1.95 (1.34-2.83)
Chronicity			
Child (N_A = 4837 N_{B/C}=3856)			
None			
Unstable vs. none	2.39 (1.81-3.17)	2.18 (1.58-3.00)	2.02 (1.46-2.79)
Stable vs. none	6.40 (4.77-8.61)	6.27 (4.48-8.77)	5.44 (3.86-7.66)
Stable vs. unstable	2.68 (2.05-3.49)	2.88 (2.11-3.93)	2.70 (1.97-3.69)
Mother (N_A = 4280 N_{B/C}=3457)			
None			
Unstable vs. none	1.84 (1.38-2.44)	2.06 (1.49-2.86)	1.85 (1.32-2.58)
Stable vs. none	3.20 (2.35-4.35)	3.94 (2.78-5.59)	3.24 (2.24-4.68)
Stable vs. unstable	1.74 (1.23-2.46)	1.91 (1.30-2.81)	1.75 (1.18-2.60)
Teacher (N_A = 4400 N_{B/C}=3073)			
None			
Unstable vs. none	1.93 (1.43-2.59)	2.24 (1.54-3.27)	1.95 (1.33-2.87)
Stable vs. none	3.84 (2.00-7.37)	2.34 (0.81-6.76)	1.97 (0.67-5.82)
Stable vs. unstable	2.00 (1.01-3.96)	1.04 (0.35-3.12)	1.01 (0.33-3.07)
Combined victimisation (N_A =5142			
N_{B/C} = 3914)			
None			
Overt vs. None	3.03 (2.36-3.88)	2.96 (2.18-4.02)	2.68 (1.96-3.66)
Relational vs. None	1.15 (0.56-2.38)	1.07 (0.43-2.68)	0.99 (0.40-2.49)
Both vs. None	7.25 (5.32-9.87)	7.78 (5.28 -11.44)	7.10 (4.79-10.51)
Relational vs. Overt	0.38 (0.18-0.80)	0.36 (0.14-0.92)	0.37 (0.15-0.95)
Both vs. Overt	2.40 (1.71-3.35)	2.63 (1.72-4.02)	2.65 (1.72-4.08)
Both vs. Relational	6.31 (2.94-13.53)	7.26 (2.77-19.00)	7.15 (2.72-18.79)

^a NA refers to the total N in model A, N_{B/C} refers to the total N in models B and C. Model A presents logistic regression results for the full data set controlling for age and gender; Model B refers to the reduced data set controlling for age and gender; Model C refers to the reduced data set controlling for age, gender, total Family Adversity Index (FAI), maternal hitting and hostility, DSM-IV Axis I diagnosis, IQ and sexual abuse.